# Contents

**Preface** .................................................................................................................................................................................................................................................. vii

- Audience ........................................................................................................................................................................................................ vii
- Documentation Accessibility ......................................................................................................................................................................................................... vii
- Document Revision History ................................................................................................................................................................................................... vii

## 1 Understanding Account Migration

- About Account Migration .................................................................................................................................................................................. 1-1
- About the AMM Application ........................................................................................................................................................................ 1-2
- AMM Process Overview .................................................................................................................................................................................. 1-2
  - About the Account Search Configuration File ............................................................................................................................................. 1-3
  - About the pin_amt Utility .................................................................................................................................................................................. 1-3
  - About the AMM Controller ........................................................................................................................................................................ 1-4
    - How AMM Controller Processes Batches with Nongroup Members ........................................................................................................ 1-4
    - How AMM Controller Processes Batches with Account Group Members .................................................................................................... 1-4
  - About the AMM Mover ................................................................................................................................................................................ 1-5
- About Distributed Transactions ........................................................................................................................................................................ 1-6
- About Using Multiple AMM Controllers ....................................................................................................................................................... 1-6
- Account Migration Performance ........................................................................................................................................................................ 1-7

## 2 Migrating Hierarchical and Sharing Accounts

- About Migrating Hierarchical and Sharing Accounts ........................................................................................................................................ 2-1
- About Searching for Member and Nongroup Member Accounts ....................................................................................................................................... 2-1
- About Account Groups .................................................................................................................................................................................. 2-2
- About Migrating Account Groups ................................................................................................................................................................. 2-2

## 3 Account Migration Restrictions

- Account Migration Restrictions ........................................................................................................................................................................ 3-1
- Account Activity Prevented during Account Migration ............................................................................................................................................... 3-1
- Do Not Rerate Events during Account Migration ................................................................................................................................................... 3-2
- Do Not Alter Account Group Members ..................................................................................................................................................................... 3-2
- Migration Prevented during Account Activity .......................................................................................................................................................... 3-2
- Unique POIDs Required across All Database Schemas ........................................................................................................................................... 3-2
- Transient Objects Are Not Migrated .................................................................................................................................................................... 3-2
- Some Client Applications May Fail during Account Migration ..................................................................................................................................... 3-3
- AMM Does Not Support LDAP Manager .............................................................................................................................................................. 3-3
4 Installing and Configuring BRM for Account Migration

System Requirements........................................................................................................... 4-1
General Software Requirements ....................................................................................... 4-1
Software Requirements for Account Migration Manager ....................................................... 4-1
Installing AMM .................................................................................................................. 4-2
Configuring All Primary and Secondary Database Schemas ................................................. 4-2
Installing the AMM Software on the Primary Installation Machine ....................................... 4-3
Configuring Your Oracle DM to Check for Invalid Objects ................................................ 4-4
Connecting AMM to Your Database Schemas ...................................................................... 4-4
Configuring Database and AMM Mover Information for Multischema Systems .................... 4-5
Configuring AMM Controller Definitions ........................................................................... 4-5
Specifying Schema Alias Information for Multischema Systems .......................................... 4-6
AMM Infranet.properties File Parameters ........................................................................ 4-6
Configuring AMM for Additional Database Schemas ............................................................ 4-8
Configuring AMM for New Custom Tables ......................................................................... 4-8
Tuning Your Database for Optimal Account Migration Performance .................................... 4-9

5 Using Account Migration Manager

Overview of Account Migration Tasks .................................................................................. 5-1
Creating the Account Search Configuration File .................................................................... 5-2
Sample Account Search Configuration File ........................................................................... 5-4
Submitting the Account Search File .................................................................................... 5-4
Enabling Migration Jobs in the Queue ................................................................................ 5-5
Starting the AMM Controller .............................................................................................. 5-5
Monitoring the AMM Controller ......................................................................................... 5-5
Checking the AMM Controller Status ................................................................................ 5-5
Checking the AMM Controller Log File .............................................................................. 5-6
Monitoring the AMM Controller in Real Time ................................................................... 5-6
Monitoring Account Migration ................................................................................................ 5-6
Monitoring Job Status .......................................................................................................... 5-6
Checking Job Details .......................................................................................................... 5-7
Checking Account Group Details ....................................................................................... 5-8
Handling Account Migration Failures .................................................................................. 5-8
Finding Debugging Information .......................................................................................... 5-8
Reprocessing Failed Batches .............................................................................................. 5-9
Purging Migrated Objects from the Source Database Schema .............................................. 5-9
Deleting Jobs from the Source Database Schema ................................................................ 5-9
Stopping the AMM Controller ............................................................................................. 5-10
Pausing and Resuming Account Migration ......................................................................... 5-10
Automating Account Migration .......................................................................................... 5-10

6 Modifying Applications to Work with AMM

Enabling ECE to Rate Events during Account Migration .................................................... 6-1
Configuring ECE to Use the AMM Acknowledgment Queue .............................................. 6-3
Modifying Custom Client Applications for AMM ................................................................. 6-3
Modifying Custom BRM Reports for AMM ........................................................................... 6-4
AMM Return Codes and Messages ......................................................................................... 6-5

7 Modifying the Account Migration Manager

Creating Custom Account Search Criteria ........................................................................... 7-1
- Creating a Search Template ................................................................................................. 7-1
- Sample Search Template ...................................................................................................... 7-1
- Adding New Entries to the Account Search Configuration File ......................................... 7-2
- Sample Account Search Configuration File .......................................................................... 7-2
- Implementing and Compiling the Conversion Interface ...................................................... 7-3
- Sample Class Implementing Conversion Interface ............................................................. 7-3
- Verifying Your Search Criteria ............................................................................................ 7-3
- Verifying That the Search Criteria Creates Valid SQL Statements ...................................... 7-4
- Verifying That the Search Criteria Finds Correct Accounts ................................................ 7-4

8 Account Migration Utilities

- pin_amt ............................................................................................................................... 8-2
- pin_amt_test ..................................................................................................................... 8-4
- About AMM Job Management Tables ............................................................................... A-1
- About Job Status Flags ....................................................................................................... B-1
- About Batch Status Flags .................................................................................................. B-1
- About Group Status Flags .................................................................................................. B-2
- AMM Entity Relationship Diagram ..................................................................................... C-1
This book describes how to move accounts between BRM database schemas. You move accounts to balance the number of accounts between schemas.

**Audience**

This book is for system administrators and operations personnel.

**Documentation Accessibility**

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

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**Document Revision History**

The following table lists the revision history for this guide:

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E73518-01</td>
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</tr>
</tbody>
</table>
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  ■ Updated the following section:  
    Starting the AMM Controller |
Understanding Account Migration

Account migration is the process of transferring data associated with selected accounts from the data’s source database schema to a destination schema.

This document provides an overview of account migration in Oracle Communications Billing and Revenue Management (BRM).

See also:
- Migrating Hierarchical and Sharing Accounts
- Account Migration Restrictions
- Installing and Configuring BRM for Account Migration
- Using Account Migration Manager
- Modifying Applications to Work with AMM
- Modifying the Account Migration Manager

About Account Migration

Account migration is the process of transferring data associated with selected accounts from the data’s source database schema to a destination schema.

You use the AMM application to perform all account migration tasks. You provide information on the accounts to migrate and on how to access the source and destination database schemas. See "About the AMM Application".

You migrate account objects to redistribute the data in the following situations:
- One BRM database schema contains significantly more or fewer accounts than other BRM database schemas (for example, when you add a schema to an existing multischema system).
- The number of events per account is significantly greater in one schema than in other schemas.
- The time it takes to complete a billing run becomes erratic.

You achieve optimal migration performance and the smallest impact to your operations if you schedule migrations for maintenance windows. If you need to migrate a large number of accounts but your maintenance window is only a couple of hours, you can perform migrations over a period of several days. The AMM software processes jobs in stages, enabling you to pause and resume account migration without affecting database integrity.

For information on scheduling migration, see "Automating Account Migration".
About the AMM Application

AMM is an application that migrates accounts and all of their associated objects from a source schema in a BRM database to a destination schema in the same database.

The AMM software migrates accounts based on information you provide in the account search configuration file for that migration task.

In this file, you specify a group of accounts to migrate based on specific criteria, such as account creation date or account status. The group of accounts and associated objects that meet this criteria forms a job.

Jobs are processed by the AMM software through a queue system, with each job processed in the order received. To improve migration performance, jobs are subdivided into batches, which contain a configurable number of accounts.

Batches are assigned to a configurable number of threads, which process the batches in parallel. Each batch is migrated in a single distributed transaction, during which time activity is prevented on the accounts in the batch. Depending on the success of the batch migration, changes to the database are either committed or rolled back.

For performance reasons, the AMM software does not automatically remove the migrated objects from the source database schema. Instead, it flags the migrated objects as invalid to prevent BRM applications from accessing them. You can use the AMM software to manually purge invalid objects from the database at any time.

AMM Process Overview

Figure 1–1 shows the AMM process overview.

The account migration process can be divided into the following stages:

1. The account search configuration file containing information on the accounts to migrate and access information for the source and destination database schemas is provided as input to the pin_amt utility. See "About the Account Search Configuration File".

2. The pin_amt utility processes the account search configuration file.
3. Every account to be migrated is set up as an individual job. The jobs are divided into batches and placed in the queue. See "About the pin_amt Utility".

4. The AMM Controller allocates batches to threads and passes batches to the AMM Mover. See "About the AMM Controller".

5. The AMM Mover migrates the batch of accounts by moving the associated data from the source schema to the destination schema. See "About the AMM Mover".

About the Account Search Configuration File

The account search configuration file provides the details on which accounts to migrate, their source and destination storage locations, and the size of each batch.

You can also migrate accounts based on custom criteria. See "Creating Custom Account Search Criteria".

About the pin_amt Utility

The pin_amt utility is a standalone utility which generates account migration jobs for the AMM Controller to process. This utility can perform all its functions, such as finding accounts to migrate and submitting and enabling jobs, whether the AMM Controller is online or offline.

You use the pin_amt utility to perform the following tasks:

- Start, stop, resume, and monitor the AMM Controller.
- Find all accounts in the source database schema that meet your search criteria.
- Enable account migration jobs in the queue.
- Delete jobs from the job management tables.
- Purge invalid objects from the source schema.

When you submit an account search configuration file, the pin_amt utility does the following:

1. Searches the source database schema for all accounts that meet the criteria in the account search configuration file, excluding all accounts that are part of hierarchical and charge or discount sharing groups.

2. Divides the list of account POIDs into batches.

3. Populates the job management tables in the primary, source, and destination schemas with the list of account POIDs to migrate. See "AMM Job Management Tables".

4. Determines whether group migration is enabled.

   - If group migration is enabled, pin_amt proceeds with steps 5 through 9.
   - If group migration is disabled, the account search is complete. The AMM Controller can begin processing the job when the job is enabled in the queue. See "About the AMM Controller".

5. Searches all hierarchical account and charge or discount sharing groups in the source schema for accounts that meet the search criteria.

6. When an account meets the search criteria, pin_amt finds all other accounts related to the account and organizes them into an account group.

7. Determines whether the size of the account group exceeds the maximum. If it does, AMM excludes the account group from the job.
Note: You specify the maximum size of an account group by using the account search configuration file. See "Creating the Account Search Configuration File".

8. Divides all members of one account group into batches. All batches in the group are assigned the same group ID and flagged as containing account group members.

9. Populates the job management tables in the primary, source, and destination schemas with the list of account POIDs to migrate. See "AMM Job Management Tables".

About the AMM Controller

The AMM Controller is a server process that checks the queue for jobs to process. By default, your system contains one AMM Controller, which processes one job at a time. For information about using multiple AMM Controllers, see "About Using Multiple AMM Controllers".

The AMM Controller processes group member and nongroup member batches in different ways:

- How AMM Controller Processes Batches with Nongroup Members
- How AMM Controller Processes Batches with Account Group Members

How AMM Controller Processes Batches with Nongroup Members

When processing batches that contain nongroup members, the AMM Controller does the following:

1. Assigns batches to threads, which run in parallel. Each thread processes one batch at a time. If there are more batches than threads, each thread must process multiple batches in sequence. You use a configuration file to configure the number of AMM Controller threads. See "Connecting AMM to Your Database Schemas".

2. Changes the batch status to IN_PROGRESS. See "About Batch Status Flags".

3. Passes the job ID, batch number, and schema qualifications to the AMM Mover on the destination database schema for processing. See "About the AMM Mover".

4. Determines whether the AMM Mover successfully migrated accounts.
   - If migration is successful, the AMM Controller commits the changes to all database schemas and changes the batch status to FINISHED. See "About Batch Status Flags".
   - If migration fails, the AMM Controller rolls back the changes and updates the batch status to FAILED. See "About Batch Status Flags".

How AMM Controller Processes Batches with Account Group Members

When processing batches that contain account group members, the AMM Controller does the following:

1. Changes the account group status to GROUP_DISABLING. See "About Group Status Flags".

2. Locks the appropriate base table records in the source database schema so that applications cannot access group member accounts during migration.
3. Marks all account group members in the source schema as invalid.

4. Determines whether all account group members were disabled in the source schema.
   - If all accounts were successfully disabled, the AMM Controller changes the account group status to GROUP_READY. See "About Group Status Flags".
   - If any accounts were not disabled, the AMM Controller changes the account group status to FAILED. See "About Group Status Flags".

5. Changes the account group status to GROUP_IN_PROGRESS.

6. Passes individual batches in the account group to the AMM Mover for processing.
   a. Assigns an individual batch in the group to a thread.
   b. Changes the batch status to IN_PROGRESS.
   c. Passes the job ID, batch number, and schema qualifications to the AMM Mover. See "About the AMM Mover".
   d. Determines whether the AMM Mover successfully migrated the batch and sets the batch status to FINISHED or FAILED.

7. Determines whether all batches in the account group migrated successfully.
   - If all batches migrated successfully, the AMM Controller enables all account group members in the destination database schema and changes the account group status to GROUP_FINISHED. See "About Group Status Flags".
   - If any batch failed to migrate, the AMM Controller changes the account group status to GROUP_FAILED. See "About Group Status Flags".

---

**Important:** When an account group fails to migrate, all its accounts remain disabled in the source and destination schemas. You must fix the error and migrate the job again before your BRM system can access the accounts.

---

### About the AMM Mover

The AMM Mover is the process that actually moves accounts from one database schema to another. Each schema contains at least one AMM Mover.

**Note:** The AMM Mover performs the following functions regardless of whether a batch contains group-member or nongroup member accounts.

When the AMM Mover receives a batch, it does the following:

1. Locks the appropriate base table records in the source database schema so that applications cannot access accounts during migration.

2. Migrates the objects for an account batch from the source schema to the destination schema in a single distributed transaction. See "About Distributed Transactions".

3. Marks all migrated objects in the source schema as invalid.

4. Updates the account POIDs in the uniqueness table to reflect the account’s new location. For example, if an account is migrated from schema 0.0.0.1 to schema
0.0.0.2, the account POID changes from 0.0.0.1 /account 2286 0 to 0.0.0.2 /account 2286 0.

**About Distributed Transactions**

The AMM software migrates each batch of accounts as a single distributed transaction by using schema qualifications. This means that changes can be made to the primary, source, and destination database schemas and then committed or rolled back in one transaction, ensuring the integrity of the database.

Figure 1–2 shows the schema qualifications for a multischema system with three database schemas, one AMM Controller, and two threads:

**Figure 1–2  AMM Database Schema Connections**

---

**About Using Multiple AMM Controllers**

---

**Caution:** Implementing multiple AMM Controllers is for advanced users only. Use multiple AMM Controllers only if you understand the impact to migration performance.

Using multiple AMM Controllers enables you to process multiple account migration jobs in parallel. However, you receive performance improvements only in the following situations:

- Your system contains more than three database schemas.
- No two migration jobs use the same schema at the same time.

When multiple jobs use the same schema, as shown in Figure 1–3, migration performance degrades significantly.
Account Migration Performance

Account migration is resource intensive and can overload your BRM system. Signs that your system is overloaded during account migration:

- Batch processing times steadily increase, without returning to their initial processing times.
- The AMM software is processing fewer than five accounts per second.
- You receive a distributed transaction time-out error (Oracle error 2049).
- There are a high number of waits for undo segment extension and latch free operations.

If your system exhibits any of these signs, you need to tune your Oracle database. For guidelines, see “Tuning Your Database for Optimal Account Migration Performance” or contact your Oracle BRM representative.

Figure 1–3  Concurrent Database Use Performance Degradation

Job 1 and Job 2 use database schema C at the same time, which decreases performance.

For more information, contact your Oracle BRM representative.
This document describes how to migrate hierarchical and sharing accounts from one database schema to another in Oracle Communications Billing and Revenue Management (BRM).

See also:
- Understanding Account Migration
- Account Migration Restrictions

About Migrating Hierarchical and Sharing Accounts

You can configure AMM to migrate hierarchical account groups and charge and discount sharing groups from a source BRM database schema to a destination schema. In this configuration, AMM does the following:

- Searches for accounts in two phases. See "About Searching for Member and Nongroup Member Accounts".
- Organizes accounts that meet the search criteria by account group. See "About Account Groups".
- Migrates entire account groups. See "About Migrating Account Groups".

By default, group migration is disabled. You specify whether to migrate account groups by using the `migration_mode` entry in the account search file (`BRM_home/apps/amt/account_search.cfg`). See "Creating the Account Search Configuration File".

---

**Caution:** When you enable group migration, you must perform extra verification steps to prevent accounts from being severed from their associated account group. See "Checking Account Group Details".

---

About Searching for Member and Nongroup Member Accounts

When you enable group migration, AMM searches for accounts in two phases:

- **In the first phase**, AMM searches for nongroup member accounts only. That is, AMM excludes all hierarchical and charge/discount sharing accounts from the account search. Accounts meeting the search criteria are divided into batches, and each batch is flagged as containing nongroup member accounts only.

- **In the second phase**, AMM searches for accounts belonging to hierarchical and charge/discount sharing groups only. If an account meets the search criteria,
AMM finds all other account members that are related to the account. These accounts are organized into an account group. See "About Account Groups".

Each account group is divided into batches, which are assigned an account group ID and flagged as containing account group members.

All accounts meeting the search criteria, both group member and nongroup member accounts, still form one job.

**About Account Groups**

An account group consists of all account members that are related to a specific account. When AMM finds an account that meets the search criteria, it finds the parent account and all other child accounts in the group. If one of the accounts is also a member of another group, it finds all members of the other group as well.

**Figure 2–1  One Account Group**

For example, in Figure 2–1, account A meets the search criteria. Because account A is a child in a hierarchical account group, AMM finds the parent account and all child accounts in that group. Because one hierarchical account member is also a member of a charge sharing group, AMM finds all accounts in the charge sharing group as well. In this example, the account group consists of all accounts in the hierarchical account group and the charge sharing group.

**About Migrating Account Groups**

AMM migrates account group member and nongroup member batches in different ways:

- **Batches containing nongroup members in one transaction.** During migration, AMM disables all accounts that belong to a single batch.
  - If the batch migrates successfully, AMM commits the changes to all database schemas and enables the accounts in the destination schema.
  - If the batch fails to migrate, AMM rolls back the changes and re-enables the accounts in the source database schema.
- **Batches containing account group members by account group ID.** AMM disables all accounts that belong to an account group before migration begins. After migration starts, AMM monitors whether all batches for the account group migrate successfully.
  - If all batches migrate successfully, AMM commits the changes to all database schemas and enables the accounts in the *destination* schema.
  - If even one batch in the group fails, AMM leaves all account group members disabled in both source and destination schemas. You must fix the error and use AMM to reprocess the job before your BRM system can access the accounts.
This document describes restrictions on migrating accounts from one database schema to another in Oracle Communications Billing and Revenue Management (BRM).

See also:
- Understanding Account Migration
- Migrating Hierarchical and Sharing Accounts

**Account Migration Restrictions**

When you run the AMM software, be aware of the following restrictions:

- Account Activity Prevented during Account Migration
- Do Not Rerate Events during Account Migration
- Do Not Alter Account Group Members
- Migration Prevented during Account Activity
- Unique POIDs Required across All Database Schemas
- Transient Objects Are Not Migrated
- Some Client Applications May Fail during Account Migration
- AMM Does Not Support LDAP Manager
- Using BRM Reports after Migration

**Account Activity Prevented during Account Migration**

To prevent applications from accessing or modifying accounts that are being migrated, AMM locks the accounts in Oracle. Only one batch of accounts per thread is locked at a time and only while the accounts are being physically migrated.

**Note:** When migrating account groups, AMM locks all accounts in the account group before migration begins.

If an application attempts to access a locked account, the Oracle Data Manager (DM) returns a PIN_ERR_INVALID_OBJECT error.
Do Not Rerate Events during Account Migration

Because the AMM software may suspend some events that you want to rerate, you must not rerate events during account migration.

Do Not Alter Account Group Members

AMM checks account group relationships only when you first create a job, and does not re-verify relationships during the migration process. Therefore, once an account group is included in a migration job, you:

- Must not add members to the account group
- Must not modify relationships between account group members

If you need to alter an account group after it is included in a job but before the job completes migration, you must:
1. Delete the migration job.
2. Modify the account group.
3. Re-create the account migration job.

Migration Prevented during Account Activity

AMM does not migrate accounts while they are being accessed or modified by BRM or another application. For best performance, stop all account activity before you migrate accounts.

If you cannot restrict all access to the accounts in your database schemas, AMM can still process account migration jobs. However, AMM does not migrate any batch that contains active accounts. You can check for failed batches and resubmit them for migration once account activity stops.

Unique POIDs Required across All Database Schemas

The AMM software can migrate only accounts that have a unique POID. Starting with Infranet Release 6.2 ServicePack 1, the multischema software automatically creates unique POIDs across all database schemas in your system.

If your database contains accounts created both prior to and after Release 6.2 ServicePack 1 was installed, AMM migrates only those accounts created after 6.2 ServicePack 1 was installed. For information on how to migrate accounts created prior to 6.2 ServicePack 1, contact your Oracle BRM representative.

---

**Important:** If your BRM system uses a custom POID generation scheme, make sure the sequence number generation algorithm creates unique POIDs across all of your database schemas.

---

Transient Objects Are Not Migrated

While the pin_amt utility migrates account objects, it does not migrate any transient objects.
Some Client Applications May Fail during Account Migration

BRM client applications may generate error messages and fail to commit changes to the database during account migration. For example, if a CSR opens an account in Billing Care just prior to the account being migrated to another database schema, an error might result.

In that case, the CSR must restart Billing Care and access the account again so it retrieves the account’s new location.

---

**Important:** If your system contains custom client applications that connect to the BRM database and search accounts based on POID, you must modify your application. See "Modifying Custom Client Applications for AMM".

---

AMM Does Not Support LDAP Manager

Currently, you cannot use AMM to migrate accounts if your BRM system includes LDAP Manager.

Using BRM Reports after Migration

To use BRM Reports after you migrate accounts, you must use BRM Reports Release 6.2 ServicePack 1 or later. If you use an earlier version of BRM Reports with AMM, your reports will retrieve and process duplicate data from your source and destination database schemas.

For example, if an account object is migrated from schema 0.0.0.1 to schema 0.0.0.2, earlier versions of BRM Reports retrieve the account object from both schemas while BRM Reports 6.2 ServicePack 1 and later retrieve the account object only from schema 0.0.0.2.

For information on how to modify custom reports to work with AMM, see "Modifying Custom BRM Reports for AMM".
Installing and Configuring BRM for Account Migration

This document explains how to install and configure software required for account migration with the Oracle Billing and Revenue Management (BRM).

See also:

- Understanding Account Migration
- Account Migration Restrictions

System Requirements

The system requirements for account migration consists of the following:

- General Software Requirements
- Software Requirements for Account Migration Manager

General Software Requirements

Before installing AMM, you must install:

- Oracle 12c database software. You must also install the following Oracle 12c components:
  - JServer
  - PL/SQL
  - SQL*Plus
- PERL libraries and the JRE required for installing BRM components.
- Multidatabase Manager. See “Installing a Multischema System” in BRM Installation Guide.

Software Requirements for Account Migration Manager

AMM is available for Oracle databases and the Linux and Solaris operating systems. For information on disk space requirements for the Linux, and Solaris operating systems, see “Disk Space Requirements” in BRM Installation Guide.

If you plan to use AMM software for account migration, you must also install:

- Java Development Kit
Installing AMM

The instructions in this section assume that you have two BRM installation machines and two database schemas in your multischema environment as shown in Figure 4–1.

Figure 4–1 Installing AMM

Installing AMM involves the following general steps:

1. Configuring All Primary and Secondary Database Schemas
2. Installing the AMM Software on the Primary Installation Machine
3. Configuring Your Oracle DM to Check for Invalid Objects
4. Connecting AMM to Your Database Schemas

Configuring All Primary and Secondary Database Schemas

Before you can install AMM, you must configure your primary and secondary database schemas for account migration.

First, ensure that you assigned unique database instance names to each schema in your system:

1. Open the tnsnames.ora file in a text editor.
2. If necessary, assign a unique database instance name to each schema. For example, for the first schema:

   Alias1 = (DESCRIPTION = (ADDRESS = (PROTOCOL=TCP)(HOST=DatabaseHostName)(PORT=1521))
   (CONNECT_DATA = (SID =DatabaseSID)))

   For the second schema:

   Alias2 = (DESCRIPTION = (ADDRESS = (PROTOCOL=TCP)(HOST=DatabaseHostName)(PORT=1521))
   (CONNECT_DATA = (SID =DatabaseSID)))

3. Save and close the file.

Then perform the following steps on each database schema in your multischema system:

1. Using SQL*Plus, log in to the database schema as the SYSTEM user and grant database linking privileges to the BRM user pin:

   % sqlplus system/manager@databaseAlias
SQL> grant create database link to pin;
Grant succeeded.

2. Verify that JServer is installed on your system:

    SQL> select object_name, object_type from all_objects where
           object_type = 'PACKAGE' and object_name = 'DBMS_JAVA';

If JServer is installed on your system, you receive the following:

    OBJECT_NAME          OBJECT_TYPE
    --------------        -----------
    DBMS_JAVA           PACKAGE

If JServer is not installed, you receive the following:

    no rows selected

3. Install JServer if it is not already installed on your system:

   a. Add the following entry to the Oracle initSID.ora file ($ORACLE_HOME/dbs/initSID.ora) of the schema’s database instance:

       java_pool_size=20971520

   b. Restart Oracle so that the schema’s database instance is initialized with your changes.

   c. Install JServer manually by running the Oracle initjvm script:

       % sqlplus sys/change_on_install@databaseAlias
       SQL> @$ORACLE_HOME/javavm/install/initjvm.sql

       For information, see your Oracle documentation.

4. Modify the entries listed in Table 4–1 in the Oracle initSID.ora file ($ORACLE_HOME/dbs/initSID.ora) of the schema’s database instance:

Table 4–1  initSID.ora Entries

<table>
<thead>
<tr>
<th>Entry</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>global_names</td>
<td>Specifies whether a database link is required to have the same name as the database schema to which it connects. Set this to False.</td>
</tr>
<tr>
<td>utl_file_dir</td>
<td>Specifies the location of the Oracle utl_file. Set this to a writable directory for the user oracle.</td>
</tr>
</tbody>
</table>

5. Restart Oracle so that the schema’s database instance is initialized with your changes.

Installing the AMM Software on the Primary Installation Machine

Note: If you already installed the product, you must uninstall its features before reinstalling them.

To install AMM, perform the following steps on the primary installation machine:

1. Install AMM. See “Installing Individual BRM Components” in BRM Installation Guide.
2. Verify that the `BRM_home/setup/scripts/pin_multidb.conf` file contains accurate information about each database schema in your system. The `pin_amt_install` script uses the information in this file to set up your AMM environment.

3. For optimal performance, store your AMM job management tables and indexes in their own physical tablespaces. Map the following entries to four separate physical tablespaces by modifying the `BRM_home/setup/scripts/pin_tables.values` file:

   `$PIN_CONF_TBLSPACE14`
   `$PIN_CONF_TBLSPACE15`
   `$PIN_CONF_TBLSPACEX16`
   `$PIN_CONF_TBLSPACEX17`

   See "Database Configuration and Tuning" in BRM Installation Guide.

4. Log in as user `pin`, go to the `BRM_home/setup/scripts` directory, and run the `pin_amt_install` script:

   ```
   # su - pin
   % cd BRM_home/setup/scripts
   % perl pin_amt_install.pl
   ```

5. Verify that installation was successful by checking the AMM installation log file `BRM_home/setup/scripts/pin_amt_install.log`.

6. Restart the BRM server.

**Configuring Your Oracle DM to Check for Invalid Objects**

During account migration, the AMM software marks all migrated objects in the source database schema as invalid. To prevent BRM applications from accessing these objects, you must configure your Oracle Data Manager (DM) to check for invalid objects during account searches.

---

**Caution:** If you do not make this change, BRM applications retrieve duplicate data from your source and destination database schemas. For example, if an account is migrated from schema `0.0.0.1` to schema `0.0.0.2`, the application retrieves the account object from both schemas.

---

To configure your system to check for invalid objects, perform the following on every machine containing an Oracle DM:

1. Add the following line to the `BRM_home/sys/dm_oracle/pin.conf` file:

   ```
   - dm_dm_nul_poid_db_chk 1
   ```

2. Restart `dm_oracle` so that your Oracle DM is initialized with your changes.

**Connecting AMM to Your Database Schemas**

During installation, the Installer stores the configuration data, such as the database schema connection details and the number and configuration of your AMM Controllers, in the Oracle wallet. AMM retrieves the data from the Oracle wallet. However, if the configuration entries are also stored in the AMM `Infranet.properties` file, AMM retrieves the data from the AMM `Infranet.properties` file. Use the Oracle wallet to provide the information necessary for AMM, such as passwords, to access the data for the accounts in your system.
For more information viewing and storing the configuration entries in the Oracle wallet, see the “About the Oracle Wallet” section in BRM System Administrator’s Guide.

Configuring Database and AMM Mover Information for Multischema Systems
Verify that the AMM Infranet.properties file contains a set of 0.0.0.x entries for each database schema in your system. For example, if you have three database schemas in your system, the file should contain a set of entries prefixed by 0.0.0.1, a set prefixed by 0.0.0.2, and a set prefixed by 0.0.0.3. Also, update the BRM wallet in the primary schema to include the user passwords for all the secondary schemas. Example 4–1 shows the entries for a system with two database schemas.

Verify that the Infranet.properties file contains information on the AMM Mover associated with each database schema. If a schema contains more than one AMM Mover, make sure to update the Infranet.properties file accordingly.

Example 4–1 Example Configuration Information for Multischema Systems

```
# primary database schema
#
0.0.0.1_user_name=pin57204
0.0.0.1_instance_name=futt11
0.0.0.1_primary=true
# AMT mover
0.0.0.1_mover_log_file_dir=unknown
0.0.0.1_mover_log_file_flag=N
0.0.0.1_grp_srch_log_file_dir=unknown
0.0.0.1_grp_srch_log_file_flag=N
#
# secondary database schema
#
0.0.0.2_user_name=pin57204m2
0.0.0.2_instance_name=futt11m2
0.0.0.2_primary=false
# AMT mover
0.0.0.2_mover_log_file_dir=unknown
0.0.0.2_mover_log_file_flag=N
0.0.0.2_grp_srch_log_file_dir=unknown
0.0.0.2_grp_srch_log_file_flag=N
```

Configuring AMM Controller Definitions
The installer creates a set of Controller_1 entries for setting up one AMM Controller in the AMM Infranet.properties file and populates them with default values, as shown in Example 4–2.

Example 4–2 AMM Controller Definitions

```
# controller definitions
#
controller_1_log_directory=/export/BRM_home/apps/amt
controller_1_port_number=18566
controller_1_server=slc00qhm
controller_1_thread_count=2
controller_1_syslog_priority=7
controller_1_event_generation=false
controller_1_concurrent_job_number=20
controller_1_hold_period=120
```
controller_1_amt_queue_owner_name=pinq
controller_1_amt_queue_name=ifw_sync_queue_amt
#

Access the Oracle wallet and verify that the entries are as required.

If you require more than one AMM Controller, determine the optimal number of AMM Controllers for your system. Make sure that you provide the optimal number of threads for each AMM Controller in your system. See "About Using Multiple AMM Controllers" for more information.

For the additional controllers, create a set of Controller_2 entries, Controller_3 entries, and so on in the Infranet.properties file.

### Specifying Schema Alias Information for Multischema Systems

When you use multischema systems, the database layer of your BRM system consists of one primary schema and one or more secondary schemas in a single database. As a result, the schema alias is the same for both schemas.

Access the Oracle wallet and enter an alias for the secondary schema in the file.

Example 4–3 shows the entries for a multischema system:

```plaintext
# Connection entries for the Primary Database Schema
0.0.0.1_user_name=pin
0.0.0.1_instance_name=Schema1Alias
0.0.0.1_primary=true
0.0.0.1_mover_log_file_dir=./mover/log
0.0.0.1_mover_log_file_flag=y

# Connection entries for the Secondary Database Schema
0.0.0.2_user_name=pin
0.0.0.2_instance_name=Schema2Alias
0.0.0.2_primary=false
0.0.0.2_mover_log_file_dir=./mover/log
0.0.0.2_mover_log_file_flag=y
```

### AMM Infranet.properties File Parameters

Table 4–2 shows the parameters used in defining the AMM Infranet.properties file.

<table>
<thead>
<tr>
<th>Entry</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0.0.x_user_name</td>
<td>String</td>
<td>Specifies the Oracle user name for the specified database schema.</td>
</tr>
<tr>
<td>0.0.0.x_instance_name</td>
<td>String</td>
<td>Specifies the SQL*Net database alias name you assigned in the tnsnames.ora file.</td>
</tr>
<tr>
<td>0.0.0.x_primary</td>
<td>true or false</td>
<td>Flag that indicates whether the database schema is the primary schema. For the primary schema, set this to true. For all secondary schemas, set this to false.</td>
</tr>
</tbody>
</table>
### Table 4–2 (Cont.) AMM Infranet.properties Values

<table>
<thead>
<tr>
<th>Entry</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>0.0.0.x_mover_log_file_dir</strong></td>
<td>Path name</td>
<td>Specifies the directory of the AMM Mover log file on the specified database schema. <strong>Important:</strong> This path must match the path specified in the <code>utl_file_dir</code> entry of the <code>initSID.ora</code> file.</td>
</tr>
<tr>
<td><strong>0.0.0.x_mover_log_file_flag</strong></td>
<td>Y or N</td>
<td>Specifies whether you want the AMM Mover to create log files on the specified database schema.</td>
</tr>
<tr>
<td><strong>0.0.0.x_grp_srch_log_file_flag</strong></td>
<td>Y or N</td>
<td>Specifies whether you want AMM to create a log file for the account group stored procedure. <strong>Note:</strong> The stored procedure finds all account group members related to a specific account.</td>
</tr>
<tr>
<td><strong>0.0.0.x_grp_srch_log_file_dir</strong></td>
<td>Path name</td>
<td>Specifies the directory for the account group stored procedure log file.</td>
</tr>
<tr>
<td><strong>controller_N_log_directory</strong></td>
<td>Path name</td>
<td>Specifies the directory in which to create the AMM Controller log file.</td>
</tr>
<tr>
<td><strong>controller_N_port_number</strong></td>
<td>Integer &gt; 1024</td>
<td>Specifies the TCP/IP port number for the connection between the <code>pin_amt</code> utility and the AMM Controller. Each AMM Controller instance requires a unique port number.</td>
</tr>
<tr>
<td><strong>controller_N_server</strong></td>
<td>String</td>
<td>Specifies the host name of the machine that runs the AMM Controller.</td>
</tr>
<tr>
<td><strong>controller_N_thread_count</strong></td>
<td>Positive integer</td>
<td>Specifies the number of AMM Controller processing threads. For optimal performance, the number of AMM Controller threads should be 1 to 2 times the number of CPUs on the destination schema that are dedicated to AMM.</td>
</tr>
<tr>
<td><strong>controller_N_syslog_priority</strong></td>
<td>1 (low) through 7 (high)</td>
<td>AMM Controller log message priority threshold. Messages with a lower priority are suppressed.</td>
</tr>
<tr>
<td><strong>pin_amt_log_directory</strong></td>
<td>Path name</td>
<td>Specifies the path to the <code>pin_amt</code> log file.</td>
</tr>
<tr>
<td><strong>controller_N_event_generation</strong></td>
<td>true or false</td>
<td>Specifies whether the AMM Controller migrates accounts when ECE is running. This configures AMM to notify ECE when accounts are migrated. The default is <strong>false</strong>.</td>
</tr>
<tr>
<td><strong>controller_N_concurrent_job_number</strong></td>
<td>Positive integer</td>
<td>Specifies how many jobs the AMM Controller starts concurrently. The default is <strong>20</strong>. <strong>Note:</strong> This entry is required only if the <code>controller_N_event_generation</code> entry is set to <strong>Y</strong>.</td>
</tr>
<tr>
<td><strong>controller_N_hold_period</strong></td>
<td>Positive integer</td>
<td>Specifies how long the AMM Controller waits, in minutes, before it starts to migrate accounts. This provides time for your ECE to process any events targeted for accounts that are being migrated. The default is <strong>120</strong>. <strong>Note:</strong> This entry is required only if the <code>controller_N_event_generation</code> entry is set to <strong>Y</strong>.</td>
</tr>
<tr>
<td><strong>controller_N_amt_queue_owner_name</strong></td>
<td>String</td>
<td>Specifies the user that created the acknowledgment queue. <strong>Note:</strong> This entry is required only if the <code>controller_N_event_generation</code> entry is set to <strong>Y</strong>.</td>
</tr>
</tbody>
</table>
Configuring AMM for Additional Database Schemas

You must reconfigure the AMM software whenever you add a database schema to an existing multischema system.

To configure AMM for additional database schemas, perform the following procedure on the primary installation machine:

1. Delete all existing account migration jobs in the queue:
   
   ```
   $ pin_amt -d JobID
   ```

2. Log in as user `pin` and run the `pin_amt_install.pl` script:
   
   ```
   # su - pin
   $ cd BRM_home/setup/scripts
   $ perl pin_amt_install.pl
   ```

   This script reinstalls the job management tables on your database schemas.

Configuring AMM for New Custom Tables

AMM migrates data to and from the tables listed in the AMM data dictionary. This list includes all BRM tables and any custom tables that were on your system when you installed AMM. If you add any tables after you install AMM, you must update the AMM data dictionary.

To update the AMM data dictionary, perform the following on your primary installation machine:

1. Log in as user `pin` and go to the `BRM_home/setup/scripts` directory:
   
   ```
   $ su - pin
   ```
% cd BRM_home/setup/scripts

2. Run the `pin_amt_install.pl` script with the `-m` parameter:
   ```
   perl pin_amt_install.pl -m
   ```

   This script updates the AMM data dictionary tables (AMT_META_DATA_T and AMT_POID_TYPE_MAP_T) on all database schemas in your system.

---

## Tuning Your Database for Optimal Account Migration Performance

To tune your database for optimal account migration performance:

- Use cost-based optimization.
- Set the number of Oracle rollback segments to approximately two times the number of AMM Controller threads. Multiple rollback segments enable Oracle to automatically allocate one rollback segment for each transaction.
- Set the `transactions_per_rollback_segment` parameter in the `$ORACLE_HOME/dbs/initSID.ora` file to a small number. For best results, set it to 1 or 2.
- Set the initial size for the rollback segment to twice the total data volume of the account batch. You can estimate the account batch data volume by multiplying the average number of events per batch with the batch size.

**Tip:** Use the EVENT_T and major child tables, such as EVENT_BAL_IMPACTS_T, to determine the average number of events per batch. Typically, 90% of the account batch data volume can be attributed to event data.

- Set the optimal size for the rollback segments to twice the initial size.
- Set the next size for the rollback segments to half the initial size.
- Set the maximum number of extends to unlimited.

For more information, see your Oracle documentation. For information on additional ways to tune your database for AMM, contact your Oracle BRM representative.
This document describes how to use the Oracle Communications Billing and Revenue Management (BRM) Account Migration Manager (AMM) software to migrate accounts from a source database schema to a destination database schema in the same database.

See also:
- Using Account Migration Manager
- Migrating Hierarchical and Sharing Accounts
- Account Migration Restrictions
- Modifying Applications to Work with AMM
- Modifying the Account Migration Manager

### Overview of Account Migration Tasks

Migrating accounts includes the following general tasks. Although you can perform some tasks at any time, the following order is recommended:

1. Create the account search configuration file.
   
   See "Creating the Account Search Configuration File" for more information.

2. Submit the account migration job.
   
   See "Submitting the Account Search File" for more information.

3. For account group migration, run a `group_details` report to verify that each account group includes all account members.
   
   See "Checking Account Group Details" for more information.

   **Caution:** You must verify that the job includes all accounts in the account group. Any missing accounts will be stored in a separate database schema from the account group, which severs the account’s relationship with the group.

4. Enable the account migration job.
   
   See "Enabling Migration Jobs in the Queue" for more information.

5. Start the AMM Controller.
   
   See "Starting the AMM Controller" and "Monitoring the AMM Controller" for more information.
6. Monitor the job’s progress.
   See "Monitoring Account Migration" for more information.

7. Fix account migration failures, when necessary.
   See "Handling Account Migration Failures" for more information.

8. Purge the migrated accounts from the source database schema.
   See "Purging Migrated Objects from the Source Database Schema" for more information.

9. Stop the AMM Controller.
   See "Stopping the AMM Controller" for more information.

See "Deleting Jobs from the Source Database Schema" for information on deleting jobs from the source database schema.

Creating the Account Search Configuration File

You use the account search configuration file to specify the source and destination database schemas, the search criteria, the maximum number of accounts in a job, and the number of accounts in each batch.

AMM can search for accounts that meet five default criteria:

- Account creation date
- Account status
- Billing day of month
- Charge offer name
- POID

If you would like to migrate accounts that meet some other custom criteria, see "Creating Custom Account Search Criteria".

To create an account search configuration file:

1. Copy the sample account search configuration file (BRM_home/apps/amt/account_search.cfg) and save it with another name. Use this file, which contains all of the configuration entries, as a template.

2. Edit the entries listed in Table 5–1 in the file.

---

**Note:** Only the source database schema, destination database schema, batch size, and one other entry is required. If you do not want to use an entry, leave it blank.
### Table 5–1  account_search.cfg Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>src_database</td>
<td>Specifies the source database schema, which is the schema from which you are migrating accounts. For example, enter 0.0.0.1. This value must match one of the database numbers specified in the Infranet.properties file.</td>
<td>YES</td>
</tr>
<tr>
<td>dest_database</td>
<td>Specifies the destination database schema, which is the schema to which you are migrating accounts. For example, enter 0.0.0.2. This value must match one of the database numbers specified in the Infranet.properties file.</td>
<td>YES</td>
</tr>
<tr>
<td>start_creation_date</td>
<td>Use this parameter to migrate accounts that were created in a specific date range. AMM migrates accounts created between midnight (00:00:00) on the start date and 23:59:59 on the end date. For example, to migrate accounts created after midnight on August 1, 2004, enter 08/01/2004. Important: If you set this parameter, you must also set the end_creation_date parameter.</td>
<td>no</td>
</tr>
<tr>
<td>end_creation_date</td>
<td>Use this parameter to migrate accounts that were created in a specific date range. AMM migrates accounts created between midnight (00:00:00) on the start date and 23:59:59 on the end date. For example, to migrate accounts created on or before 11:59:59 p.m. on August 10, 2004, enter 08/10/2004. Important: If you set this parameter, you must also set the start_creation_date parameter.</td>
<td>no</td>
</tr>
</tbody>
</table>
| migration_mode | Specifies whether to migrate account groups. When AMM finds an account that belongs to a hierarchical account or charge or discount sharing group, AMM migrates all accounts related to that account.  
  - IncludeAccountGroup specifies to migrate accounts groups.  
  - ExcludeAccountGroup specifies to exclude account groups from migrations.  
The default is ExcludeAccountGroup. Important: If you set this parameter, you must also set the max_group_size parameter. | no       |
| max_group_size | Specifies the maximum size of an account group that AMM can migrate. If an account group exceeds the maximum number of accounts, AMM excludes the account group from the job. The default is 100. | no       |
| product_name  | Migrates accounts that purchased the specified charge offer. For example, Offer 1b - Email Account. | no       |
| account_status | Migrates accounts based on the specified account status.  
  - Active specifies to migrate active accounts only.  
  - Inactive specifies to migrate inactive accounts only.  
  - Closed specifies to migrate closed accounts only. | no       |
| bill_day_of_month | Migrates accounts that have the specified billing day of month. You can specify any number from 1 through 31. For example, enter 4 to migrate all accounts that are billed on the 4th of the month. | no       |
Submitting the Account Search File

Table 5–1  (Cont.) account_search.cfg Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>max_accounts</td>
<td>Specifies the maximum number of accounts to move in a job.</td>
<td>no</td>
</tr>
<tr>
<td>batch_size</td>
<td>Specifies the number of accounts in each batch. You can specify any amount from 1 through 1,000. However, for optimal performance, set this to an integer between 50 and 100. Important: ■ Using a batch size of more than 50 accounts does not improve performance. ■ If you set this to a number greater than 100, you must increase the size of your Oracle rollback segments. For more information, contact your Oracle BRM representative.</td>
<td>YES</td>
</tr>
<tr>
<td>poid_list</td>
<td>Migrates accounts based on the POID. Use comma separators, for example, 22860, 22861, 22862. Limit the number of accounts to 1,000 or less.</td>
<td>no</td>
</tr>
</tbody>
</table>

3. Save the file.

Sample Account Search Configuration File

The following sample account search configuration file specifies to:

- Migrate accounts from database schema 0.0.0.1 to database schema 0.0.0.2.
- Migrate in batches of 50 accounts.
- Migrate only nonmember accounts.
- Migrate accounts that meet the following criteria:
  - Created between January 1, 2004 and June 31, 2004
  - Have an active account status
  - Purchased the Offer 1b - Email Account charge offer

src_database=0.0.0.1
dest_database=0.0.0.2
start_creation_date=01/01/2004
dest_creation_date=06/31/2004
migration_mode=ExcludeAccountGroup
max_group_size=
product_name=Offer 1b - Email Account
account_status=Active
bill_day_of_month=
max_accounts=
batch_size=50
poid_list=

Submitting the Account Search File

When you submit an account search file, the pin_amt utility searches the source database schema and populates the job management tables on the primary, source, and destination database schemas with a list of accounts meeting the specified criteria.

1. Submit your account search information to the pin_amt utility:

   % pin_amt -s AccountSearchFile
   submitted job
   job_id=30
The `pin_amt` utility notifies you if it successfully submitted the file and gives you the job ID number.

2. Write down the job ID number, because you will need it later.

### Enabling Migration Jobs in the Queue

The AMM Controller can only begin processing an account migration job after it's enabled in the queue.

To enable a job in the queue, enter this command:

```
% pin_amt -e JobID
```

enabled job

### Starting the AMM Controller

After it is started, the AMM Controller runs as a server process, continuously checking for jobs to process in the queue.

To start the AMM Controller:

1. Go to the `BRM_home/sys/amt` directory.

```
Important:  The default location of the AMM Infranet.properties file is `BRM_home/sys/amt`. If the AMM Infranet.properties file is located in a different directory, start the AMM controller from that location.
```

2. Run the following command:

```
% pin_amt -c start [-a ControllerID]
```

controller is started
controller_id=1

```
Note:  If your system contains multiple AMM Controllers, use the `-a` option to specify which AMM Controller to start. By default, `pin_amt` starts Controller 1.
```

The `pin_amt` utility notifies you if the AMM Controller started successfully and which AMM Controller is active.

### Monitoring the AMM Controller

You can monitor the AMM Controller’s status at any time by using the `pin_amt` utility or checking the AMM Controller log file.

### Checking the AMM Controller Status

To check whether the AMM Controller is up and running, enter this command:

```
% pin_amt -c status [-a ControllerID]
```

controller status is up
Monitoring Account Migration

Checking the AMM Controller Log File

The AMM Controller log file contains a detailed list of all transactions executed by the AMM Controller. This log is created in the directory specified in the `controller_N_log_directory` entry of the `Infranet.properties` file. You can open the log file by using a text editor.

Monitoring the AMM Controller in Real Time

You can use the `pin_amt` utility to see what the AMM Controller is doing in real time.

To monitor the AMM Controller in real time, enter this command:

```
% pin_amt -c log [-a ControllerID]
```

A separate Xterm window opens. For best viewing, set the Xterm width to 120. If an Xterm window fails to open, make sure your `DISPLAY` environment variable is set correctly.

Monitoring Account Migration

You can monitor the status of jobs in the queue by running three special AMM reports: `list_jobs`, `job_details`, and `group_details`.

Monitoring Job Status

The `list_jobs` report provides the status of each job in the queue, including the number of batches that failed to migrate.

To run the `list_jobs` report, enter this command:

```
% pin_amt -r list_jobs
```

Sample output from a `list_jobs` report:

```
Tue Mar 12                                                                                         page 1
AMT jobs
Total   Failed    Succ.                  Proc.  Job
Account  Account  Account                  --------  ---------  ----------------
--------  ---------  ------  -------  -------  -------  ----------  ---------  ----------------  --
---
```
If any batches failed, you can see greater detail on why the batch failed by running the `job_details` report.

### Checking Job Details

The `job_details` report provides detailed information about a job's status, including why a batch failed.

To run the `job_details` report, enter this command:

```
% pin_amt -r job_details
enter job id:
```

Sample output from a `job_details` report:

```
Tue Mar 12

AMT job details

<table>
<thead>
<tr>
<th>Job ID</th>
<th>Message</th>
<th>Account</th>
<th>Status</th>
<th>Error</th>
<th>Processing start</th>
<th>Batch processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td></td>
<td></td>
<td>FINISHED</td>
<td></td>
<td>03/01/2002 18:42</td>
<td>25 5</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>distributed</td>
<td></td>
<td>FAILED</td>
<td>ORA-02055:</td>
<td>03/01/2002 18:42</td>
<td>5 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>update operation failed;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>rollback required</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ORA-02049: timeout:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>distributed transaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>waiting for lock</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ORA-06512: at &quot;PIN.AMT_MV&quot;,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>line 454</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ORA-06512: at line 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>FINISHED</td>
<td></td>
<td></td>
<td></td>
<td>03/01/2002 18:42</td>
<td>25 5</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>FINISHED</td>
<td></td>
<td></td>
<td></td>
<td>03/01/2002 18:43</td>
<td>25 5</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>FINISHED</td>
<td></td>
<td></td>
<td></td>
<td>03/01/2002 18:43</td>
<td>25 5</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>FINISHED</td>
<td></td>
<td></td>
<td></td>
<td>03/01/2002 18:44</td>
<td>25 5</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>FINISHED</td>
<td></td>
<td></td>
<td></td>
<td>03/01/2002 18:44</td>
<td>25 5</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>FINISHED</td>
<td></td>
<td></td>
<td></td>
<td>03/01/2002 18:45</td>
<td>25 5</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

The report lists any error messages from the Oracle database. For information, see the Oracle documentation.
Checking Account Group Details

The group_details report lists the accounts in each account group and provides information about each group’s migration status. You use this information to verify that all account members are included in a group.

Caution: All accounts in a hierarchical account or charge or discount sharing group must reside in the same database schema. Any accounts separated from a parent account will no longer be associated with the account group.

To run the group_details report, enter this command:

```
% pin_amt -r group_details
```

test job id:
test group id:

Sample output from a group_details report:

```
Tue Mar 12 AMT group details

<table>
<thead>
<tr>
<th>Job ID</th>
<th>Account ID</th>
<th>Batch</th>
<th>Group ID</th>
<th>Group Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>17009</td>
<td>1</td>
<td>1</td>
<td>NOT_PROCESSED</td>
</tr>
</tbody>
</table>
```

Tue Mar 12 AMT group member details

<table>
<thead>
<tr>
<th>Account ID</th>
<th>Accounts DB</th>
</tr>
</thead>
<tbody>
<tr>
<td>17009</td>
<td>2</td>
</tr>
<tr>
<td>17289</td>
<td>2</td>
</tr>
<tr>
<td>16489</td>
<td>2</td>
</tr>
<tr>
<td>17313</td>
<td>2</td>
</tr>
<tr>
<td>16465</td>
<td>2</td>
</tr>
<tr>
<td>17066</td>
<td>2</td>
</tr>
</tbody>
</table>

Handling Account Migration Failures

An account batch may fail for several reasons. The most common reasons are as follows:

- An application is accessing or modifying the data you are attempting to migrate.
- The database is down.

Finding Debugging Information

For information on why a batch failed, you can run a job_details report or check any of the following files, which are located in the directories you specified in the Infranet.properties file.

- AMM installation log file (pin_amt_install.log)
Deleting Jobs from the Source Database Schema

- AMM Controller log file (*controller_N_YYYYMMDDhhmm.log*)
- pin_amt log file (*pin_amt.log*)
- AMM configuration file (*Infranet.properties*)
- Account search configuration file (*account_search.cfg*)
- AMM Mover log files (*amt_migrate_JobID_BatchNumber.log*)
- AMM delete log file (*amt_delete_JobID_BatchNumber.log*)

If you need assistance in resolving migration failures, send these files along with any additional information about the problem to your Oracle BRM representative.

Reprocessing Failed Batches

To reprocess a batch that failed:
1. Fix the problem.
2. Change the status of the batch from FAILED to NOT PROCESSED:
   ```
   % pin_amt -b JobID:BatchNumber
   ```
3. Enable the job in the queue again:
   ```
   % pin_amt -e JobID
   ```

   The AMM Controller processes all batches that have a NOT PROCESSED status and ignores batches with a FINISHED status.

Purging Migrated Objects from the Source Database Schema

After you successfully migrate your accounts, you can improve your overall system performance by purging the migrated (invalid) objects from your source database schema. Also, because the purging process uses only one thread, purges accounts sequentially, and doesn't affect data used by BRM, you can purge accounts at any time.

To purge successfully migrated objects from the source database schema, enter this command:

```
pin_amt -p SourceDatabaseSchema
```

Deleting Jobs from the Source Database Schema

You can use the delete option to:
- Remove both failed and successfully migrated jobs from your database schemas
- Free up disk space

The delete option performs the following actions listed in Table 5–2:

<table>
<thead>
<tr>
<th>Job Type</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failed jobs</td>
<td>Deletes the job from the AMM job management tables.</td>
</tr>
<tr>
<td>Successfully migrated jobs</td>
<td>■ Deletes the job from the AMM job management tables.</td>
</tr>
<tr>
<td></td>
<td>■ Deletes account-related data from the source database schema.</td>
</tr>
</tbody>
</table>
To delete a job, run the `pin_amt` script with the delete option:

```
pin_amt -d JobID
```

**Stopping the AMM Controller**

You can stop the AMM Controller at any time. If you stop the AMM Controller while it is processing a batch, it finishes the batch before stopping.

To stop the AMM Controller, enter this command:

```
% pin_amt -c stop
controller is stopped
controller_id=1
```

**Pausing and Resuming Account Migration**

If a job contains a large number of accounts, but you only have a limited amount of time in which to migrate accounts, you can migrate the job in stages. The AMM software allows you to start an account migration job and then pause it when your window of opportunity is over. When you reach the next window of opportunity, you can resume the job where it left off.

---

**Note:** An AMT Controller must completely finish migrating one job before it can start migrating another job. Therefore, if you pause one job and then enable a second job, the AMT Controller cannot begin processing the second job until the first job is finished.

---

To pause an account migration job, enter this command:

```
% pin_amt -c pause
paused controller
controller_id=1
```

To resume an account migration job, enter this command:

```
% pin_amt -c continue
continued controller
controller_id=1
```

**Automating Account Migration**

You can use an external scheduler, such as `cron`, to automate account migration during your maintenance window. If you need to migrate a large number of accounts, you can set up `cron` to stop and restart account migration at specific times.

For example, scheduling account migration for every Sunday from 2:00 a.m. to 4:00 a.m. requires these tasks:

1. Stop the AMM Controller.
2. Create your account search configuration files.
3. Submit your jobs.
4. Enable your jobs in the queue.
5. Configure one `cron` job to start the AMM Controller every Sunday at 2:00 a.m. and check for errors. See "AMM Return Codes and Messages".
6. Configure a second `cron` job to stop the AMM Controller every Sunday at 4:00 a.m. and check for errors.
Modifying Applications to Work with AMM

This document provides information on modifying custom client applications and custom reports to work with the Oracle Communications Billing and Revenue Management (BRM) Account Migration Manager (AMM) software. It also provides the list of AMM return codes that are used for automating AMM.

See also:
- Understanding Account Migration
- Account Migration Restrictions
- Modifying the Account Migration Manager

Enabling ECE to Rate Events during Account Migration

In BRM, account migration consists of transferring the data associated with accounts from a source BRM database schema to a target BRM database schema. It is performed by Account Migration Manager (AMM). For more information about account migration, see the discussion about migrating accounts in *BRM System Administrator’s Guide*.

After you enable ECE to rate events during account migration, the AMM business events listed in Table 6–1 automatically notify ECE that an account migration job is occurring. They enable ECE to track the status of the migration, to notify BRM if ECE fails to clear its rated event data store before the migration begins (a migration prerequisite), to continue rating events while the accounts are migrated, and to update its information about the target database schema for successfully migrated accounts.
### Table 6-1  ECE Response to AMM Business Events

<table>
<thead>
<tr>
<th>AMM Business Event</th>
<th>ECE Response</th>
</tr>
</thead>
</table>
| HoldCDRProcessing  | 1. Gets the migration job ID, the source database schema, and the target database schema from this event.  
2. Queries the BRM database for the list of accounts that belong to the migration job.  
3. Waits for all existing rated events associated with those accounts to be extracted from the Oracle NoSQL database data store.  
4. Does one of the following:  
  - Assigns the IN_ACCOUNT_MIGRATION status to the accounts.  
  - Updates their target database schema information.  
  - Sends an ACKHoldCDRProcessing acknowledgment to the BRM acknowledgment queue.  
  - Continues rating incoming usage events for the migrated accounts but does not extract them from the Oracle NoSQL database data store.  
If the extraction fails, ECE sends a NACKHoldCDRProcessing acknowledgment to BRM, and BRM does not migrate the accounts. |
| MigrateAcct        | Sends an ACKMigrateAcct acknowledgment to the AMM acknowledgment queue. |
| MigrateSource      | Sends an ACKMigrateSource acknowledgment to the AMM acknowledgment queue. |
| MigrateDestination | Sends an ACKMigrateDestination acknowledgment to the AMM acknowledgment queue. |
| ResumeCDRProcessing| 1. Gets the migration job ID, the source database schema, and the target database schema from this event.  
2. Queries the BRM database for the list of accounts that belong to the migration job.  
3. Removes the IN_ACCOUNT_MIGRATION status from those accounts.  
4. Loads all the rated events that were generated while the accounts’ status was IN_ACCOUNT_MIGRATION into the new target database schema. |

To enable ECE to rate events during account migration:

1. Configure the definition of your system’s AMM controllers for ECE:
   a. Go to the `BRM_home/sys/amt` directory and open the `Infranet.properties` file in a text editor.  
   b. Verify that the following entry is set to true:

   ```
   controller_1_event_generation=true
   ```

   c. If more than one controller is defined in the file, ensure that each controller’s `controller_controller_number_event_generation=entry` is set to true.

   d. Save and close the file.

   The change takes effect the next time the `pin_amt` utility is run. For more information, see the discussion about that utility in *BRM System Administrator’s Guide*.

2. Configure ECE to use the AMM acknowledgment queue.

3. Verify that Customer Updater is correctly configured for your system and running.
ECE receives AMM business events from the BRM Account Synchronization DM database queue through Customer Updater. Because account migration involves multiple database schemas, Customer Updater must be configured to support all the database schemas in your system. It must also be configured to send AMM-related acknowledgments from ECE to your system’s AMM acknowledgment queue.

4. Verify that BRM Gateway is correctly configured for your system and running.
5. Verify that Rated Event Formatter is correctly configured for your system and running.

**Configuring ECE to Use the AMM Acknowledgment Queue**

The AMM acknowledgment queue is used to send AMM-related acknowledgments from ECE to BRM; it is an Oracle AQ database queue on the BRM system.

To configure ECE to use the AMM acknowledgment queue:

1. Access the ECE configuration MBeans:
   a. Log on to the driver machine.
   b. Start the ECE charging servers (if they are not started).
   c. Connect to the ECE charging server node enabled for JMX management.
      This is the charging server node set to `start CohMgt = true` in the `ECE_home/occeserver/config/eeCTopology.conf` file.
   d. Start a JMX editor that enables you to edit MBean attributes, such as JConsole.
   e. In the editor’s MBean hierarchy, find the ECE configuration MBeans.
2. Expand the **ECE Configuration** node.
3. Expand **charging.connectionConfigurations.oracleQueueConnection**.
4. Expand **Attributes**.
5. Set the **amtAckQueueName** attribute to the fully qualified name of the acknowledgment queue to which the **pin_amt** utility listens to AMM-related acknowledgment events:

   \[
   \text{schema.ammAcknowledgmentQueue}
   \]

   where:
   
   - \text{schema} is the name of the BRM database schema in which the AMM acknowledgment queue resides.
   - \text{ammAcknowledgmentQueue} is the name of the AMM acknowledgment queue.

   For example:
   
   \[
   \text{PIN01.ECE_AMT_ACK_QUEUE}
   \]

6. Save your changes.

**Modifying Custom Client Applications for AMM**

Custom client applications that connect to a specific database schema and try to access an object based on a POID may receive a **PIN_ERR_INVALID_OBJ** error if the object was migrated to another database schema. You must modify any custom client
applications to handle that error and then perform a global search to find the object’s correct location.

To obtain the correct POID of an object, modify your application to call the PCM_OP_GLOBAL_SEARCH opcode from its exception handling routine.

This example shows a call to the PCM_OP_GLOBAL_SEARCH opcode when the PIN_ERR_INVALID_OBJ error is returned from the Oracle DM:

```c
/* Error? */
if (PIN_ERR_IS_ERR(ebufp)) {
    PIN_ERR_LOG_EBUF(PIN_ERR_LEVEL_ERROR, "sample_read_obj_search error", ebufp);
}
/* Call the DM to do a global search.*/
PCM_OP(ctxp, PCM_OP_GLOBAL_SEARCH, 0, flistp, &r_flistp, ebufp);
return;
```

The following opcodes return the PIN_ERR_INVALID_OBJ error when a POID specified in an input flist is invalid:

- PCM_OP_READ_OBJ
- PCM_OP_READ_FLDS
- PCM_OP_WRITE_FLDS
- PCM_OP_INC_FLDS
- PCM_OP_DELETE_OBJ
- PCM_OP_DELETE_FLDS
- PCM_OP_TRANS_OPEN

---

**Modifying Custom BRM Reports for AMM**

After account migration, any custom BRM reports created prior to Infranet Release 6.2 ServicePak1 might retrieve and process duplicate data from your source and destination database schemas. For example, if an account object is migrated from database schema 0.0.0.1 to database schema 0.0.0.2, your report might retrieve the account object from both database schemas.

To prevent this, use the Oracle Business Intelligence Publisher to add the following line to the WHERE clause of each custom report’s query:

```
TABLE_T.POID_DB > 0
```

where `TABLE_T` satisfies these conditions:

- It is a database table used by the report.
- It is one of the tables moved from the source database schema to the destination database schema when account data is migrated.
- It is associated with every record the report must retrieve.

**Note:** If a single table does not satisfy the last condition, add the same line for several tables that together satisfy the last condition.
AMM Return Codes and Messages

AMM uses the return codes and messages shown in Table 6–2. To automate account migration, you can modify your external application to check for the following return codes and respond appropriately.

<table>
<thead>
<tr>
<th>Return Code Number</th>
<th>Return Code</th>
<th>Return Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>CONTROLLER_STARTED_SUCCEED</td>
<td>controller is started</td>
</tr>
<tr>
<td>101</td>
<td>CONTROLLER_STOPPED_SUCCEED</td>
<td>controller is stopped</td>
</tr>
<tr>
<td>102</td>
<td>CONTROLLER_PAUSED_SUCCEED</td>
<td>paused controller</td>
</tr>
<tr>
<td>103</td>
<td>CONTROLLER_CONTINUED_SUCCEED</td>
<td>continued controller</td>
</tr>
<tr>
<td>104</td>
<td>CONTROLLER_UP_SUCCEED</td>
<td>controller status is up</td>
</tr>
<tr>
<td>105</td>
<td>CONTROLLER_DOWN_SUCCEED</td>
<td>controller status is down</td>
</tr>
<tr>
<td>106</td>
<td>SUBMIT_JOB_SUCCEED</td>
<td>submitted job</td>
</tr>
<tr>
<td>107</td>
<td>DELETE_JOB_SUCCEED</td>
<td>deleted job</td>
</tr>
<tr>
<td>108</td>
<td>PURGE_DATABASE_SUCCEED</td>
<td>purged database</td>
</tr>
<tr>
<td>109</td>
<td>ENABLE_JOB_SUCCEED</td>
<td>enabled job</td>
</tr>
<tr>
<td>110</td>
<td>REPORT_SUCCEED</td>
<td>generated report</td>
</tr>
<tr>
<td>111</td>
<td>ENABLE_BATCH_SUCCEED</td>
<td>enabled batch</td>
</tr>
<tr>
<td>200</td>
<td>CONTROLLER_RUNNING_ERROR</td>
<td>ERROR: controller is already running</td>
</tr>
<tr>
<td>201</td>
<td>CONTROLLER_PAUSED_ERROR</td>
<td>ERROR: controller is already paused</td>
</tr>
<tr>
<td>202</td>
<td>CONTROLLER_SPEC_ACCESS_ERROR</td>
<td>ERROR: controller specification does not exist</td>
</tr>
<tr>
<td>203</td>
<td>CONTROLLER_COMM_ERROR</td>
<td>ERROR: controller cannot be reached</td>
</tr>
<tr>
<td>204</td>
<td>SEARCH_SPEC_IO_ERROR</td>
<td>ERROR: account search specification could not be accessed</td>
</tr>
<tr>
<td>205</td>
<td>OPERATION_ROLLBACK_ERROR</td>
<td>ERROR: operation rollback</td>
</tr>
<tr>
<td>206</td>
<td>SEARCH_SPEC_PARSE_ERROR</td>
<td>ERROR: account search specification cannot be parsed</td>
</tr>
<tr>
<td>207</td>
<td>OPERATION_PERM_ERROR</td>
<td>ERROR: operation not permitted for current user OR job_id/batch_id does not exist</td>
</tr>
<tr>
<td>208</td>
<td>CONTROLLER_UNKNOWN_HOST_ERROR</td>
<td>ERROR: controller host not found</td>
</tr>
<tr>
<td>209</td>
<td>CONTROLLER_PROCESS_ERROR</td>
<td>ERROR: controller process could not be created</td>
</tr>
<tr>
<td>210</td>
<td>REPORT_PROCESS_ERROR</td>
<td>ERROR: external process interruption</td>
</tr>
<tr>
<td>211</td>
<td>REPORT_SCRIPT_ACCESS_ERROR</td>
<td>ERROR: reporting tool not found or report type does not exist</td>
</tr>
<tr>
<td>212</td>
<td>OPT_PARAM_REQ_ERROR</td>
<td>ERROR: one optional parameter is required</td>
</tr>
<tr>
<td>213</td>
<td>CONFIG_FILE_ACCESS_ERROR</td>
<td>ERROR: configuration file cannot be accessed</td>
</tr>
</tbody>
</table>
### Table 6–2 (Cont.) AMM Return Codes and Messages

<table>
<thead>
<tr>
<th>Return Code Number</th>
<th>Return Code</th>
<th>Return Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>214</td>
<td>INIT_ERROR</td>
<td>ERROR: could not create new object</td>
</tr>
<tr>
<td>215</td>
<td>EMPTY_RESULTSET_ERROR</td>
<td>ERROR: account search resulted in 0 accounts, job submission failed</td>
</tr>
<tr>
<td>216</td>
<td>CONVERSION_CLASS_LOAD_ERROR</td>
<td>ERROR: dynamic loading of custom Conversion class failed</td>
</tr>
</tbody>
</table>
Modifying the Account Migration Manager

This document describes how to create custom search criteria for the Oracle Communications Billing and Revenue Management (BRM) Account Migration Manager (AMM).

See also:
- Understanding Account Migration
- Account Migration Restrictions
- Modifying Applications to Work with AMM

Creating Custom Account Search Criteria

AMM allows you to migrate accounts that meet custom criteria. For example, you can create custom criteria for finding and migrating accounts located in a certain state or belonging to a particular service provider.

To create a custom search criteria, perform these tasks:

1. Creating a Search Template
2. Adding New Entries to the Account Search Configuration File
3. Implementing and Compiling the Conversion Interface
4. Verifying Your Search Criteria

Creating a Search Template

AMM searches for accounts in a database schema by using SQL statements generated from an account search template. Before AMM can generate a SQL statement with new search criteria, you must first create a template for it in the custom account search properties file.

To create a template for your search criteria:

1. Open the custom account search properties file (BRM_home/apps/amt/com/portal/amt/custom_account_search.properties) in a text editor.
2. Add SQL fragments for your search criteria by using the following syntax:
   
   criteria_name=AND SQL_condition 

   Where:
   - criteria_name is the name of your selection criteria.
SQL_condition is a valid SQL condition that searches a BRM table and references one or more search variables, as shown below. Search variables must be surrounded by curly braces “{ }” and match an entry in the account_search.cfg file.

condition_text '{@SearchVariable}'

---

**Important:** SearchVariable must use a unique name and must not match one of the BRM-defined search variable names. For the list of BRM-defined search variables, see "Creating the Account Search Configuration File".

---

For information on the SQL condition, see your Oracle documentation.

3. Save and exit the file.

**Sample Search Template**

The following sample search template enables AMM to search for accounts located in a particular state. It tells AMM to search the ACCOUNT_NAME_INFO_T table for objects with the state field set to a specified value.

```sql
# select accounts based on state
cust_acct_search_account_state_constraint=\nAND EXISTS \n  (SELECT an.obj_id0 FROM account_nameinfo_t an \n  WHERE an.obj_id0 = a.poid_id0 and an.state = '{account_state}') \n```

**Adding New Entries to the Account Search Configuration File**

When building a query, AMM replaces the search variables in your account search template with values from the account search configuration file (BRM_home/apps/amt/account_search.cfg).

To add an entry for your search variable:

1. Open the BRM_home/apps/amt/account_search.cfg file in a text editor.
2. Add your new search entry and comments to the file.

**Important:** SearchVariable must match the search variable name referenced in the custom_account_search.properties file.

```ini
# - You should add comments about the new search entry and # valid values.

SearchVariable=
```

3. Save and exit the file.

**Sample Account Search Configuration File**

A sample search entry for the account_state search criteria:

```ini
# - Migrates accounts located in a specific state. Valid values # are California and Oregon.
account_state=
```
Implementing and Compiling the Conversion Interface

Each custom search variable must have a corresponding Java implementation of the Conversion interface.

1. Run the appropriate profile script for your shell. This script sets your CLASSPATH and PATH environment variables to the appropriate values. For example, for the c shell:

   % cd BRM_home/apps/amt
   % source profile.csh

2. Create a class that implements the Conversion interface.

3. Save and compile your SearchVariable.java source file in the BRM_home/apps/amt/com/portal/amt directory.

   % cd BRM_home/apps/amt/com/portal/amt
   % javac SearchVariable.java

   This creates a SearchVariable.class file in the same directory.

---

**Important:** For AMM to successfully build a search with your custom search criteria:

- The class name must match the search variable name used in the custom_account_search.properties and account_search.cfg files.
- The class must reside in the BRM_home/apps/amt/com/portal/amt directory.

---

Sample Class Implementing Conversion Interface

The following sample class, account_state.class, allows users to search for accounts from California or Oregon.

```java
package com.portal.amt;
public class account_state implements Conversion {
    public String convert(String stateName) throws ConversionException {
        String stateCode = null;
        if(stateName.equals("California")) {
            stateCode = "CA";
        } else if(stateName.equals("Oregon")) {
            stateCode = "OR";
        } else {
            throw new
            ConversionException("Error: account_state " + stateName + " unknown.");
        }
        return(stateCode);
    }
}
```

Verifying Your Search Criteria

Before migrating accounts with the new search criteria, verify its accuracy by:

1. Verifying That the Search Criteria Creates Valid SQL Statements
2. Verifying That the Search Criteria Finds Correct Accounts
Creating Custom Account Search Criteria

Verifying That the Search Criteria Creates Valid SQL Statements

Use the "pin_amt_test" utility to verify that your custom search template generates a valid SQL statement.

1. Open your account search configuration file (BRM_home/apps/amt/account_search.cfg) in a text editor.

2. Enter values for the source and destination database schemas, the batch size, and your custom search criteria.

   For example, you might enter the following to test the account_state criteria:

   src_database=0.0.0.1
   dest_database=0.0.0.2
   start_creation_date=
   end_creation_date=
   product_name=
   account_status=
   bill_day_of_month=
   max_accounts=
   batch_size=50
   poid_list=
   account_state=California

3. Save and exit the file.

4. Use the pin_amt_test utility to generate a SQL statement with your new search criteria.

   \% pin_amt_test -c AccountSearchFile

   If successful, the utility displays the resulting SQL statement. For example, the sample account_state criteria generates the following:

   Compile: account_search.cfg
   -------
   account search SELECT statement:
   -- acct_search_select: default
   SELECT
   DISTINCT a.poid_id0
   FROM account_t a
   WHERE
   ...

   If the compilation failed, the utility returns the file name and line number where the error occurred. For example, the utility returns the following when users enter an invalid state for the sample account_state criteria:

   compile: account_search.cfg
   -------
   account_search.cfg:32: mapping of account_state field value Florida failed

5. Verify that the resulting SQL statement is correct.

Verifying That the Search Criteria Finds Correct Accounts

Use the pin_amt_test utility to verify that your search criteria works properly. This utility only displays results on the screen and does not migrate your objects.

To verify your search query:

1. Create a database schema with a precisely defined set of account data. The database schema should contain a small number of accounts.
2. Create a list of account POIDs that meet the custom criteria you are testing. For example, write down the POIDs of all accounts created in California.

3. Open your account search configuration file (BRM_home/apps/amt/account_search.cfg) in a text editor.

4. Enter values for the source and destination database schemas, the batch size, and your custom search criteria.

   For example, you might enter the following to test the account_state criteria:

   src_database=0.0.1
   dest_database=0.0.2
   start_creation_date=
   end_creation_date=
   product_name=
   account_status=
   bill_day_of_month=
   max_accounts=
   batch_size=50
   poid_list=
   account_state=California

5. Save and exit the file.

6. Use the pin_amt_test utility to execute your search query against the source database schema:

   % pin_amt_test -e AccountSearchFile

7. The utility prints to the screen a list of account POIDs that meet your search criteria. Compare this list of POIDs with the list you created in step 2.

   If the lists match, your new search criteria works properly and you can start using it to migrate accounts.

   If the lists do not match, make sure:

   - Your search template generates a valid SQL statement.
   - Your search template, search configuration file, and class all refer to the same variable name.
This document provides reference information for Oracle Communications Billing and Revenue Management (BRM) Account Migration utilities.

Topics in this document:

- `pin_amt`
- `pin_amt_test`
pin_amt

Use this utility to migrate accounts from a source database schema to a destination database schema in the same BRM database.

You define which accounts to migrate in the account search configuration file in the `BRM_home/apps/amt` directory. See "Creating the Account Search Configuration File".

**Note:** To connect to the BRM database, the `pin_amt` utility needs a configuration file in the `BRM_home/sys/amt` directory. For information on how to create this file, see "Connecting AMM to Your Database Schemas".

**Location**

`BRM_home/bin`

**Syntax**

```bash
pin_amt [-f ConfigFileName] [-a ControllerID]
        [-c start | stop | pause | continue | status | log]
        [-s AccountSearchFile] [-d JobID]
        [-r list_jobs | job_details | group_details]
        [-p SourceDatabaseSchema] [-e JobID][-b JobID:BatchNumber][-h]
```

**Parameters**

- `-f ConfigFileName`
  Specifies the name of the configuration file that defines how to connect to each database schema in your system. By default, the `pin amat` utility looks in the `BRM_home/sys/amt` directory. If your configuration file is located in a different directory, you must specify the entire path for the file.

  If you use the `BRM_home/sys/amt/InfraNet.properties` file, you can ignore this parameter.

- `-a ControllerID`
  Specifies the AMM Controller to use.

  Use this option only with the `-c` option and only when your system contains multiple AMM Controllers. If your system contains only one AMM Controller, ignore this option.

- `-c start | stop | pause | continue | status | log`
  Sets the AMM Controller. When your system contains multiple AMM Controllers, you must also use the `-a` option.

  Use one of these options with the parameter:

  - `-c start` starts the AMM Controller.
  - `-c stop` stops the AMM Controller. If you stop the AMM Controller while it is processing a batch, it finishes processing the batch before stopping.
  - `-c pause` pauses the processing of a job in the queue. If you pause the Controller while it is processing a batch, it finishes processing the batch before pausing.
  - `-c continue` restarts processing a job that was paused.
-c status displays the current status of the AMM Controller.
- c log displays all AMM Controller transactions in real time through an Xterm window. To use this option, you must set the DISPLAY environment variable correctly.

-s AccountSearchFile
Specifies the name of the configuration file that defines which accounts to migrate. For information on how to create the file, look at the sample account search configuration file (BRM_home/apps/amt/account_search.cfg).

By default, the pin_amt utility looks in the current working directory. If your configuration file is located in a different directory, you must specify the entire path for the file.

-d JobID
Deletes the specified job from the job management tables. When deleting a job that migrated successfully, this option also purges all migrated accounts from the source database schema.

-e JobID
Enables the specified job in the queue.

-r list_jobs | job_details | group_details
Runs the preconfigured report. Use one of these options with the parameter:

-r list_jobs displays the status of all jobs currently in the queue.
-r job_details displays the details of the specified job.
-r group_details displays the details of the specified account group.

-p SourceDatabaseSchema
Purges all accounts that were successfully migrated from the source database schema. For example, to purge invalid objects from your primary schema, enter the following:

pin_amt -p 0.0.0.1

-h
Displays the syntax and parameters for this utility.

-b JobID:BatchNumber
Changes the status of the batch from FAILED to NOT PROCESSED, and the job from FINISHED to DISABLED. For information, see "About Batch Status Flags" and "About Job Status Flags".

Results
The pin_amt utility notifies you when it successfully completes a command.

For error information about each job, run a report or look in the AMM Mover log file. The log file is in the directory specified by the 0.0.0.x_mover_log_file_dir entry in the Infranet.properties file.

For error information about the AMM Controller, look in the AMM Controller log file. The log file is in the directory specified by the controller_N_log_directory entry in the Infranet.properties file.

The history of all pin_amt commands is located in the pin_amt log file.
Use this utility to test your custom BRM account search criteria. This utility safely executes your search criteria against a source database schema and displays either a SQL SELECT statement or a list of account POIDs meeting your search criteria.

You define which custom search criteria to test in the account search configuration file (`BRM_home/apps/amt/account_search.cfg`). See "Creating the Account Search Configuration File".

Note: To connect to the BRM database, the `pin_amt_test` utility needs a configuration file in the `BRM_home/sys/amt` directory. For information on how to create this file, see "Connecting AMM to Your Database Schemas".

#### Location
`BRM_home/apps/amt`

#### Syntax
```
pin_amt_test [-f ConfigFileName ]   
             -c AccountSearchFile | -e AccountSearchFile | -h
```

#### Parameters

- `-f ConfigFileName`
Specifies the name of the configuration file that defines how to connect to each database schema in your system. By default, the `pin_amt_test` utility looks in the `BRM_home/sys/amt` directory. If your configuration file is located in a different directory, you must specify the entire path for the file.

If you use the `BRM_home/sys/amt/Infranet.properties` file, you can ignore this parameter.

- `-c AccountSearchFile`
Displays the SQL SELECT statement generated with the account search criteria specified in `AccountSearchFile`.

By default, the `pin_amt_test` utility looks in the current working directory. If your account search file is located in a different directory, you must specify the entire path for the file.

- `-e AccountSearchFile`
Executes the SQL SELECT statement for the specified search criteria against the source database schema and displays the list of account POIDs meeting the search criteria.

By default, the `pin_amt_test` utility looks in the current working directory. If your account search file is located in a different directory, you must specify the entire path for the file.

- `-h`
Displays the syntax and parameters for this utility.
Results

The pin_amt_test utility prints to the screen the SQL SELECT statement, a list of accounts meeting your search criteria, or an Oracle error message. For information about Oracle error messages, see your Oracle documentation.
This document describes tables used in account migration in Oracle Communications Billing and Revenue Management (BRM).

About AMM Job Management Tables

Job management tables are created on your database schemas during installation and are populated with information about each migration job.

The AMM installer creates the tables listed in Table A–1 on your schemas:

<table>
<thead>
<tr>
<th>Table Name</th>
<th>Schema</th>
<th>Description</th>
<th>When Populated</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMT_ACCOUNT_BATCH_TABLE_T</td>
<td>Primary only</td>
<td>Stores the list of tables containing data to migrate for a particular batch.</td>
<td>Populated by the AMM Mover when it migrates a particular batch.</td>
</tr>
<tr>
<td>AMT_METADATA_T</td>
<td>All schemas</td>
<td>AMM data dictionary. This lists all default BRM tables as well as any custom tables you created. If you add any tables after you install AMM, you must refresh the AMM data dictionary. See &quot;Configuring AMM for New Custom Tables&quot;.</td>
<td>During installation and when you run <code>pin_amt_install.pl -m</code> to refresh the AMM data dictionary.</td>
</tr>
<tr>
<td>AMT_POID_TYPE_MAP_T</td>
<td>All schemas</td>
<td>Maps the POID type to the table name. This table is static.</td>
<td>During installation and when you run <code>pin_amt_install.pl -m</code> to refresh the data dictionary.</td>
</tr>
</tbody>
</table>
Account Migration Flags

This document describes flags used in account migration in Oracle Communications Billing and Revenue Management (BRM).

About Job Status Flags

The AMM software sets jobs to a status listed in Table B–1. You can see a job’s status by running a list_jobs report. See “Monitoring Job Status”.

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISABLED</td>
<td>The job has been submitted but not enabled.</td>
</tr>
<tr>
<td>NOT_PROCESSED</td>
<td>The account migration job is enabled and waiting in the queue to be processed.</td>
</tr>
<tr>
<td>PRE_MIGRATION_WAITING</td>
<td>AMM is notifying ECE to suspend events for all accounts in the job.</td>
</tr>
<tr>
<td>PRE_MIGRATION</td>
<td>ECE acknowledged that it is suspending events for all accounts in the job. AMM is waiting a specified amount of time before starting migration.</td>
</tr>
<tr>
<td>READY</td>
<td>The job is ready to be processed.</td>
</tr>
<tr>
<td>IN_PROGRESS</td>
<td>The job is being processed by the AMM Controller.</td>
</tr>
<tr>
<td>FAILED</td>
<td>The job has been aborted.</td>
</tr>
<tr>
<td>BAL_MIGRATED</td>
<td>The account discount balance migrated successfully.</td>
</tr>
<tr>
<td>POST_MIGRATION_</td>
<td>AMM is notifying ECE that the job migrated successfully.</td>
</tr>
<tr>
<td>WAITING</td>
<td></td>
</tr>
<tr>
<td>POST_MIGRATION</td>
<td>ECE acknowledged that it updated all account information.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>PRE_JOB_RECYCLE</td>
<td>AMM is notifying ECE to resume processing events for accounts in the job.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>JOB_RECYCLE</td>
<td>ECE acknowledged that it is ready to begin reprocessing events for accounts in the job.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>FINISHED</td>
<td>The job has completed successfully.</td>
</tr>
</tbody>
</table>

About Batch Status Flags

AMM sets account batches to a status listed in Table B–2. You can check a batch’s status by running a job_details report. See “Checking Job Details”.
Table B–2  Batch Status Flags

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT_PROCESSED</td>
<td>The account batch has not yet been migrated.</td>
</tr>
<tr>
<td>IN PROGRESS</td>
<td>The account batch is currently being migrated.</td>
</tr>
<tr>
<td>FAILED</td>
<td>The account batch failed to migrate. All changes to the database have been rolled back.</td>
</tr>
<tr>
<td>FINISHED</td>
<td>The account batch migrated successfully. All changes to the database have been committed.</td>
</tr>
</tbody>
</table>

About Group Status Flags

AMM sets account groups to a status listed in Table B–3. You can check an account group’s status by running a group_details report. See "Checking Account Group Details".

Table B–3  Group Status Flags

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT_PROCESSED</td>
<td>The account group has not yet been migrated.</td>
</tr>
<tr>
<td>GROUP_DISABLING</td>
<td>All account group members are being disabled in the source database schema. That is, AMM is marking all account group members as invalid to prevent applications from accessing those accounts.</td>
</tr>
<tr>
<td>FAILED</td>
<td>AMM did not disable all account group members in the source schema.</td>
</tr>
<tr>
<td>GROUP_READY</td>
<td>All account group members were successfully disabled in the source schema. AMM can begin processing batches.</td>
</tr>
<tr>
<td>GROUP_IN_PROGRESS</td>
<td>The account group is currently being migrated.</td>
</tr>
<tr>
<td>GROUP_FAILED</td>
<td>The account group failed to migrate to the destination schema.</td>
</tr>
<tr>
<td>GROUP_FINISHED</td>
<td>The account group migrated successfully.</td>
</tr>
</tbody>
</table>
This document shows the entity relationship diagram for the Oracle Communications Billing and Revenue Management (BRM) Account Migration Manager (AMM).

**AMM Entity Relationship Diagram**

_Figure C–1_ shows the Account Migration Manager Entity Relationship (ER) Diagram.

*Figure C–1  Account Migration Manager ER Diagram*
AMM Entity Relationship Diagram

C-2 Moving Accounts between Database Schemas